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**COMPUTER-ASSISTED MODELLING METHOD FOR THE BEHAVIOR OF A  
STEEL VOLUME HAVING A VOLUMETRIC SURFACE**

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**CROSS REFERENCE TO RELATED APPLICATIONS**

[0001] This application is the US National Stage of International Application No. PCT/EP2004/053709, filed December 27, 2004 and claims the benefit thereof. The International Application claims the benefits of German Patent application No. 10 2004 005 919.5 filed February 6, 2004. All of the applications are incorporated by reference herein in their entirety.

**FIELD OF THE INVENTION**

- [0002] The present invention relates to a computer-assisted modelling method for the behavior of a steel volume having a volumetric surface,
- [0003] in which a computer, based on an instantaneous initial state of the steel volume and at least one instantaneous influence quantity operating via the volumetric surface on the steel volume, by resolving an equation of thermal conduction and a phase change equation, determines a subsequent state of the steel volume,
- [0004] in which the at least one influence quantity comprises at least one local influence in each case for a number of surface elements of the volumetric surface and the local influences operate via the relevant surface element on the steel volume,
- [0005] in which the initial state and the subsequent state for a number of volume elements of the steel volume each comprise local elements of modelled phases of the steel and a quantity describing the local energy content of the steel,
- [0006] in which the modelled phases of the steel comprise austenite and a first further phase into which austenite can be changed and which can be changed into austenite.

**BACKGROUND OF THE INVENTION**

- [0007] This type of modelling method is known for example from DE-A-101 29 565. In this publication in particular an attempt was made for the first time to resolve the Fourier thermal conductivity equation itself and not to resolve an incorrect variation of this thermal conductivity equation, in order to correctly describe the thermodynamic behavior of a steel band. This publication is thus included by reference it in the disclosed content of the present invention.